SRAP
Smallholder Rubber Agroforestry Project
ICRAF/GAPKINDO

WEST-SUMATRA PROGRESS REPORT

NUMBER 1/March 1996

SRAP IMPLEMENTATION AND ON FARM EXPERIMENTATION SITES SELECTION IN THE WEST-SUMATRA PROVINCE

MONITORING MISSION

Eric Penot, ICRAF

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MONITORING MISSION

Eric Penot, ICRAF

1 OBJECTIVE OF THE MISSION

The main objective was to monitor the planting of 8 on farm trials in the village of Bangkok. The trials originally sheduled for Lubuk Gadang have been cancelled.
Only RAS 2.2 trials will be implemented by farmers as they want to grow intercropping as far as possible during rubber immature period.

After control in the field, complete protocoles and maps of each trials have been set up according to local conditions and discusions with farmers

2 MEETING WITH GAPKINDO Padang

After a presentation of a situation inthe fields, the budget proposal for 1996 has been approved by GAPKINDO/Padang. Budget is available in anex 7.

3 VISIT TO THE SRAP SITE IN EAST PASAMAN : in the village of BANGKOK.

All trials are in the village of bangkok. The altitude is at the limit of marginal land for rubber (between 500 and 600 meters). Land is critical in term of nutrients capacity and content, slopes are steep and Imperata is a major risk.
RAS 2.2 appears as one of the most probable tree crop based alternative to rehailitate such critical land.

The 3 trials are basically RAS 2.2 trials with rubber (550 trees/ha), associated trees (92 trees/ha) and annual intercropping with rice in rainy season and palawijas in dry season, as far as possible during immature period.

The 3 trials are the following :
RAS 2.2a : ***comparison of 3 amounts of fertilization for rubber*** : 0 fertilization, Rock Phosphate (RP) at planting time only and complete TCSDP fertilization programme for the first 2 years (NPK).

RAS 2.2b : ***emphasis is put on rice experimentation : comparison of 4 systems*** :
- local rice + limited fertilization dosis (N-P)
- local + economical fertilization dosis (N-P-K)
- wayararem + economicalBPS fertilization dosis (N-P-K)
- wayararem + complete CRIFC fertilization dosis (N-P-K)

RAS 2.2c : ***emphasis is put on thecomparison between clones (both RRIC 100 and PB 260) and BLIG (both BLIG from North-Sumatra and South-Sumatra).***

RAS protocols are presented in anex 1.

Plot situation is presented in anex 2.

MAIN COMPONENT OF A PROGRAMME OF ACTIVITIES

Paddy species survey :

Pak Sofyan may supervise a short survey on the local upland rice varieties used by the farmers/ It will help us to select the best local variety, ie the best adapted to local conditions and appreciated by farmers, to be used in our trials. Survey file is in anex 3.

Monitoring : establishment and implementation

The first monitoring to do is the following :

- to do a map of each plot with barisan karet and number of trees per barisan.
- control of the rubber planted trees in the field : to count the dead ones.

To be done as sonn as possible

In August 1996 and then in January 1997:
Monitoring : growth of rubber and associated trees. The protocol is in annex 4.

Weekly monitoring of :

RUBBER AND ASSOCIATED TREES

- weeding (6 X /year)
- fertilization of rubber and rice.
- control of staking and holing for the trials to be planted in september.
- control of the rubber nursery in polybag (irrigation and shading).
- control of the associated trees nursery in polybag (irrigation and shading).

Associates trees and rubber for replacement should be planted in september 1996.

- control of diseases.

RICE

- planting according to theplot distribution. The plots are randomized. Maps for each trials will be later relased.
- monitoring of weeding (2 x) and fertilization (2x).
- harvesting and measurement of production per plot.
- control of diseases.

RAS Plot files

Each field should have its plo-file with all relevant information (data, groth monitoring, maps.....). Plot-files are available in anex 5.

Monitoring of rice experimentation

See each plot file and trial protocole.
The programme is the following :

- July/August : planting of rice/Local varieties
- October : planting of wayararem.
- harvesting in january/February.

Fertilizers and wayararem seeds should be provided to the farmers in june. See the table in anex 6

Monitoring of labour

Each farmers should have a copy of the "buku buruh" and report in thisbook everytime he's going to SRAP plot the following :
- activity
- number of persons
- number of hours
- type of buruh : keluarga (familial) or Lain (external)
- the plot concernec (bagian).

The PPL should once a month that information is well collected by farmers. It is important for the farmers to be concerned wxith data collecting.

Technical training

Pak Hisar should train technically on rubber, rice and soil conservation the 2 PPL and all staff from Pro-RLK/Disbun involved in our on farmexperimentation in the fields.

Order of inputs.

See in anex the inputs rerquirements and thedate of supply.

WEST SUMATRA SRAP ON FARM EXPERIMENTATION PROGRAMME

Village of Bangkok

FARMER	type of RAS	RAS name	CLONE	PCS	Date of planting	TOTAL AREA sheduled	SHEDULED Number of rep /farm	Number Of plots	ACTUAL TOTAL AREA real	Number of rubber trees	Number of rep /farm	Number Of plots
EMA	RAS 2.2a	Rubber fertilization	RRIC 100		Jan 96	9000	3	9	0.56	310	2	6
WARNI	RAS 2.2a	Rubber fertilization	RRIC 100		Jan 96	9000	3	9	0.55	300	2	6
SIAM	RAS 2.2b	Rice experimentation	PB 260		Jan 96	9000	1	9	0.55	300	1	4
BURHAN	RAS 2.2b	Rice experimentation	PB 260		Jan 96	9000	1	9	0.45	250	1	4
UDIN	RAS 2.2c	Clone/BLIG comparieon	PB 260		Jan 96	8000	5	10	0.42	230	4	4
				BLIG 1	March 96				0.21	115	2	2
				BLIG 2	March 96				0.21	115	2	2
BUDIMAN	RAS 2.2c	Clone/BLIG comparieon	RRIC 100		Jan 96	8000	5	10	0.32	180	3	3
				BLIG 1	March 96				0.16	90	2	2
				BLIG 2	March 96				0.16	90	2	2
BADUL	RAS 2.2b	Rice experimentation	PB 260		Sept 96	9000	1	9	0.8	440	2	8
MUKTAR	RAS 2.2b	Rice experimentation	PB 260		Sept 96	9000	1	9	0.8	440	2	8

WEST SUMATRA SRAP ON FARM EXPERIMENTATION PROGRAMME

Village of Bangkok

TRIALS MONITORING ASSESSMENT FOR GROWTH

FARMER	type of RAS	TOTAL AREA ha	Number of rep per farm	Number of plots	RUBBER Total number of planted trees	Number of trees to be monitored	ASSOCIATED TREES Total number of planted trees	Number of trees to be monitored	Total mandays
EMA	RAS 2.2a	0.56	2	6	308	180	52	26	
WARNI	RAS 2.2a	0.55	2	6	300	180	50	25	
SIAM	RAS 2.2b	0.55	1	4	300	120	50	25	
BURHAN	RAS 2.2b	0.45	1	4	248	120	41	21	
UDIN	RAS 2.2c	0.84	4	8	462	240	77	39	
BUDIMAN	RAS 2.2c	0.64	3	7	352	210	59	29	
BADUL	RAS 2.2b	0.80	2	8	440	240	74	37	
MUKTAR	RAS 2.2b	0.80	2	8	440	240	74	37	
TOTAL NUMBER OF TREES MONITORED (BASE 30)						1,530	477	238	
Numbre of days required for monitoring (base 30)						6		1	7

Total number of tree to be monitored 30 (base 30)

Total days in the field for monitoring (base 30)
Total days in the field for monitoring (base 20)
(base 2man for monitoring : one for measuring + one for writing data on paper)
Number of trees monitored per plot : 30 /plot
Rubber planted density/ha 550 /ha
Associated trees/ha 92
% of associated trees to be monitored 50.00%
Monitoring time: 1 tree/minute X 6 heures 250 per day

ANEX 1

RAS 2.2 PROTOCOLES

RAS METHODOLOGY

RAS 2.2a TRIAL PROTOCOL
RUBBER + associated trees + intercropping
RUBBER FERTILIZATION

TITLE
Clonal rubber in agroforestry environment : rubber + selected associated trees + intercropping / TREATMENT ON RUBBER FERTILIZATION

OBJECTIVE/HYPOTHESE
OBJECTIVES

As in jungle rubber system where rubber seedlings are associated with various kind of trees and plants, RAS 2.2 aims to associate usefull trees (fruits and timber trees) with rubber, at a limited planting density, without subtantial decrease in rubber yield.
Rubber is planted at normal planting density of 550/ha as associated trees are planted at 92 trees/ha with a maximum number of 30 for big trees.
In that case, fertilization of rubber may be a key factor in the trade-off between fertilization and level of weeding. This trial is aimed to compare 3 level of fertilization on clonal rubber in RAS 2.2 system. It takes into account that trials are planted in critical land : small CEC, few nutrients, soil acidity, erratic rainfall, steep slopes and Imperata.

Hypotheses

General hypotheses for RAS 2.2 :
- It is expected that rubber growth during immature period will not be affected by associated trees competition as these selected fruits and timber trees have generaly a slow growth pattern (in partticular for durian , local fruits and timber species).
- It is expected that intercropping during the first 3 or 4 years of rubber imature period will create a favourable environment for a good rubber growth due to intercrop weedings and secondary effect of fertilization..
- Intercropping will limit the extend of weeds such as Imperata.

Specifically for RAS 2.2A in West-Sumatra :
- We do not know in the specific conditions of West-Sumatra if rubber need fertilization or not, and a which level.

EXPECTED OUTPUTS

To produce recommendations on components of RAS 2.2 :
- rubber fertilization management required for successful growth of rubber clone in this environment

LOCATION : WEST SUMATRA , village of Bankok

RAS 2.2a protocol

YEAR :
planting of rubber : December 1995-January 1996

DURATION
5 to 6 years for immature period. The first 2 years are critical in terms of growth and survivability. Then, if possible, a minimum of 3 years of production monitoring.

MATERIALS AND METHOD
Rubber + intercropping + associated trees : **on all plots.**

Treatments : on rubber fertilization

A. Rubber with no fertilization.
6 weedings/ year on the row. (100cm on either side of the trees).

B. Rubber with limited RP fertilization : 200 grammes of RP per tree at planting time only (or 140 grammes of SP 36).
6 weedings/ year on the row. (100cm on either side of the trees).

C. Control:
Rubber with complete TCSDP fertilization programme.
6 weedings/ year on the row. (100cm on either side of the trees).

2 replications per farm.
2 farms
Total number of replication : 4 rep.

EXPERIMENTAL DESIGN
Randomized block system

RUBBER
All rep are planted with RRIC 100.

FERTILIZATION

PLOT A : O fertilisation.

PLOT B : RP only at planting time

PLOT C : TCSDP fertilization programme only for the first 2 years. No fertilization later.

RUBBER PLANTING DISTANCE
Standart : 550 trees/ha : 3 x 6 meters.

RUBBER WEEDING :

6 weedings ayear , every 2 months, on a regular basis. Local observation and presence of alang² may change that pattern.

INTERCROPPING

RAINY SEASON
Rice is not a treament is this trial. The same variety with the same amount for fertilization is cropped in all the field.
Local rice has been planted in 1995/96 without fertilization.
Rice will be planted in september 1996 : local rice + recommended Sembawa fertilisation (100 kg urea + 130 kg SP 36 + 75 kg KCL). Urea is provided in 3 periods : planting time, + 40 days and + 80 days after planting.
Chemical treatment againts pests and diseases.
Weeding : 2 weedings during growth.
DRY SEASON
According to farmers strategy: nothing or palawijas : such as groundnut which is the best inter crop for dry season.
No fertilization.

ASSOCIATED TREES

Planting density : 92 trees/ha : 9 x 12 meters.
Selected trees are durian, rambutan, jengkol and Surian + other trees acccording to local situation. The associated trees frame should be the same for all trials, or similar.
Weeding : same as for rubber (6 weedings/year).

FIELD SIZE per farm

PLOT SIZE : 1000 m²
NUMBER OF PLOTS PER REPLICATION : 2 plots
NUMBER OF REPLICATION/farm : 2
REPLICATION/FARM SIZE : 4 plots : 4 000 m²

TOTAL SIZE OF THE TRIAL : 0.8 ha with 2 farmers
Total number of replication : 4

DATA TO BE COLLECTED

Standart data for all RAS 2.2 :
RUBBER
- rubber growth measurements : diameter, height and worls the first year every 3 months. Then girth the second year every 3 months. Sample of 30 trees per plot.

RAS 2.2a protocol

- Farmer's labour for each plot.
- soil samples per replication on 0-10 and 10-20 cm.

ASSOCIATED TREES

- tree growth measurements : girth every year at planting anniversary time for all trees per plot.

RICE

- date of planting
- date of harvest
- yield of 100 m^2 square at 14 % water content

Labour requirement per plot.

RAS METHODOLOGY

RAS 2.2b TRIAL PROTOCOL
RUBBER + associated trees + intercropping
RICE EXPERIMENTATION : VARIETY X FERTILIZATION

TITLE

Clonal rubber in agroforestry environment : rubber + selected associated trees + intercropping / TREATMENT ON RICE VARIETIES AND AMOUNT OF FERTILIZATION.

OBJECTIVE/HYPOTHESE

OBJECTIVES

As in jungle rubber system where rubber seedlings are associated with various kind of trees and plants, RAS 2.2 aims to associate usefull trees (fruits and timber trees) with rubber, at a limited planting density, without subtantial decrease in rubber yield.
Rubber is planted at normal planting density of 550/ha as associated trees are planted at 92 trees/ha with a maximum number of 30 for big trees.
Rice intercropping provides to rubber a indirect good weeding management and good conditions for growth. The objective is to optimize in farmers conditions rice cropping with the best adapated technological package adoptable by local farmers

Hypotheses

General hypothese for RAS 2.2 :
- It is expected that rubber growth during immature period will not be affected by associated trees competition as these selected fruits and timber trees have generaly a slow growth pattern (in partticular for durian , local fruits and timber species).
- It is expected that intercropping during the first 3 or 4 years of rubber imature period will create a favourable environment for a good rubber growth due to intercrop weedings and secondary effect of fertilization..
- Intercropping will limit the extend of weeds such as Imperata.
- there is an indirect benefit of rice fertilization on rubber.

Specific for RAS 2.2 b :
- We do not know in the specific conditions of West-Sumatra what are the best adapted rice varieties and their management (weedings and fertilization) as well as possible crop rotation.

EXPECTED OUTPUTS

To produce recommendations on components of RAS 2.2 :
- Rice varieties, fertilization level and rotation (with palawijas).

RAS 2.2b protocol

LOCATION : WEST SUMATRA , village of Bankok

YEAR :
planting of rubber : December 1995-January 1996

DURATION
5 to 6 years for immature period. The first 2 years are critical in terms of growth and survivability. Then, if possible, a minimum of 3 years of production monitoring.

MATERIALS AND METHOD
Rubber + intercropping + associated trees on all plots except one with no associated trees.

DRAFT
Treatments : 4 rice cropping systems are tested :

Treatment A
- local rice from Bangkok + minimal fertilisation (50 kg urea and 75 kg SP 36)

Treament B
- Local rice + recommended BPS fertilization programme : 100-130-75 /urea, SP 36, KCL

Treatment C
- Improved rice (wayararem) + recommended BPS fertilization programme : 100-130-75 urea, SP 36, KCL

Treatment D
- Improved rice + recommended CRIFC fertilization programme : 150-225-150 urea, SP 36, KCL

Urea is provided in 3 periods : planting time, + 40 days and + 80 days after planting.
Chemical treatment againts pests and diseases.
Weeding : 2 weedings during growth.

1 replication per farm. 4 plots per farm
4 farms
Total number of replication : 4 rep.

EXPERIMENTAL DESIGN
Split plot with main treatment : variety and sub treatment : fertilization

RUBBER
All rep are planted with PB 260

FERTILIZATION of RUBBER
TCSDP fertilization programme only for the first 2 years. No fertilization later.

RAS 2.2b protocol

RUBBER PLANTING DISTANCE
Standart : 550 trees/ha : 3 x 6 meters.

RUBBER WEEDING :
6 weedings ayear , every 2 months, on a regular basis. Loca observation and presence of alang² may change that pattern.

INTERCROPPING

RAINY SEASON
See treatments ON RICE
DRY SEASON
According to farmers strategy: nothing or palawijas : such as groundnut which is the best inter crop for dry season.

ASSOCIATED TREES

Planting density : 92 trees/ha : 9 x 12 meters.
Selected trees are durian, rambutan, jengkol and Surian + other trees acccording to local situation. The associated trees frame should be the same for all trials, or similar.
Weeding : same as for rubber (6 weedings/year).

FIELD SIZE per farm

PLOT SIZE : 1000 m²
NUMBER OF PLOTS PER REPLICATION : 4 plots
NUMBER OF REPLICATION/farm : 1
REPLICATION/FARM SIZE : 4 plots : 4 000 m²
Number of farms : 4

TOTAL SIZE OF THE TRIAL : 1.6 ha with 4 farmers
Total number of replication : 4

DATA TO BE COLLECTED

Standart data for all RAS 2.2 :
RUBBER
- rubber growth measurements : diameter, height and worls the first year every 3 months. Then girth the second year every 3 months. Sample of 30 trees per plot.
- Farmer's labour for each plot.
- soil samples per replication on 0-10 and 10-20 cm.

ASSOCIATED TREES
- tree growth measurements : girth every year at planting anniversary time for all trees per plot.

RAS 2.2b protocol

RICE

- date of planting
- date of harvest
- yield of 100 m² square at 14 % water content

Labour requirement per plot.

RAS METHODOLOGY

RAS 2.2c TRIAL PROTOCOL
RUBBER + associated trees + intercropping
COMPARISON CLONAL RUBBER AND POLYCLONAL SEEDLINGS (BLIG)

TITLE

Clonal rubber in agroforestry environment : rubber + selected associated trees + intercropping / Comparison between rubber planting material : Clone vs bLIG

OBJECTIVE/HYPOTHESE
OBJECTIVES

As in jungle rubber system where rubber seedlings are associated with various kind of trees and plants, RAS 2.2 aims to associate usefull trees (fruits and timber trees) with rubber, at a limited planting density, without subtantial decrease in rubber yield.
Rubber is planted at normal planting density of 550/ha as associated trees are planted at 92 trees/ha with a maximum number of 30 for big trees.
Various type of rubber planting material are available in particular clones and BLIG (polyclonal seedlings from North and South-Sumatra) : the aim is to do a comparison between rubber planting material : Clone vs bLIG.

Hypotheses

- Clonal rubber requires more weeding and maintainance that polyclonal seedlings.
- Use of polyclonal rubber seeds ils less expensive that clones and easier to use (direct planting).
- The selected clones are resistant to leaf diseases as BLIG seems to be very susceptible (as it has been observed in West-Pasaman).
- Clones productivity is higher that that of polyclonal seedlings.
- Polyclonal seedlings are very heterogeneous (30 % of the trees produce 70 % of the total production) leading to more labour andcaution for tapping.
- growth of polyclonal seedlings is supposed to be more vigourous that that of clones, however this may be not true with fast growing early starter clones such as those selected for RAS (PB 260 and RRIC 100)

General hypothese on RAS 2.2
- It is expected that rubber growth during immature period will not be affected by associated trees competition as these selected fruits and timber trees have generaly a slow growth pattern (in partticular for durian , local fruits and timber species).
- It is expected that intercropping during the first 3 or 4 years of rubber imature period will create a favourable environment for a good rubber growth due to intercrop weedings and secondary

effect of fertilization..
- Intercropping will limit the extend of weeds such as Imperata.

EXPECTED OUTPUTS

To produce recommendations on components of RAS 2.2 :
- rubber planting material suitability between BLIG and clones for East Pasaman conditions..

LOCATION : WEST SUMATRA , village of Bankok

YEAR :
planting of rubber : December 1995-January 1996

DURATION
5 to 6 years for immature period. The first 2 years are critical in terms of growth and survivability. Then, if possible, a minimum of 3 years of production monitoring.

MATERIALS AND METHOD
Rubber + intercropping + associated trees on all plots.

Treatments
A. Control:
Clonal Rubber PB 260 (4 rep in one farm) and RRIC 100 (4 rep in one farm) with complete TCSDP fertilization programme.
6 weedings/ year on the row. (100cm on either side of the trees).

B. BLIG1 from North-Sumatra with complete TCSDP fertilization programme (for each farm)
6 weedings/ year on the row. (100cm on either side of the trees).

C. BLIG2 from South-Sumatra with complete TCSDP fertilization programme (for each farm)
6 weedings/ year on the row. (100cm on either side of the trees).

4 replications per farm for the clone and 2 rep per type of BLIG : 8 plots per farm
2 farms :
FARM 1 : 4 rep with RRIC 100 compared to BLIG1 and BLIG2
FARM 2 : 4 rep with PB 260 compared to BLIG1 and BLIG2
Total number of replication : 8 rep for clones , 4 rep per type of BLIG.

EXPERIMENTAL DESIGN
Randomized block system

RAS 2.2c protocol

4 rep are planted with RRIC 100.
4 rep are planted with PB 260
Each rep is 1000 m²

FERTILIZATION

TCSDP fertilization programme only for the first 2 years. No fertilization later.

RUBBER PLANTING DISTANCE
Standart : 550 trees/ha : 3 x 6 meters.

RUBBER WEEDING :

6 weedings ayear , every 2 months, on a regular basis. Loca observation and presence of alang² may change that pattern.

INTERCROPPING

RAINY SEASON
Rice is no a treament is this trial. The same variety at the same amount for fertilization is cropped in all the field.
Local rice has been planted in 1995/96 without fertilization.
Rice will be planted in september 1996 : local rice + recommended Sembawa fertilisation (100 kg urea + 130 kg SP 36 + 75 kg KCL). Urea is provided in 3 periods : planting time, + 40 days and + 80 days after planting.
Chemical treatment againts pests and diseases.
Weeding : 2 weedings during growth.
DRY SEASON
According to farmers strategy: nothing or palawijas : such as groundnut wgich is the best inter crop for dry season.

ASSOCIATED TREES

Planting density : 92 trees/ha : 9 x 12 meters.
Selected trees are durian, rambutan, jengkol and Surian + other trees acccording to local situation. The associated trees frame should be the same for all trials, or similar.
Weeding : same as for rubber (6 weedings/year).

FIELD SIZE per farm

PLOT SIZE : 1000 m²
NUMBER OF PLOTS PER REPLICATION : 2 plots for BLIG and 4 plots for clones
NUMBER OF REPLICATION/farm : 4 (clone) and 2 per type of BLIG
REPLICATION/FARM SIZE : 8 plots : 8 000 m²

RAS 2.2c protocol

TOTAL SIZE OF THE TRIAL : 1.6 ha with 2 farmers
Total number of replication : 8

DATA TO BE COLLECTED

Standart data for all RAS 2.2 :

RUBBER

- rubber growth measurements : diameter, height and worls the first year every 3 months. Then girth the second year every 3 months. Sample of 30 trees per plot.
- Farmer's labour for each plot.
- soil samples per replication on 0-10 and 10-20 cm.

ASSOCIATED TREES

- tree growth measurements : girth every year at planting anniversary time for all trees per plot.

RICE

- date of planting
- date of harvest
- yield of 100 m^2 square at 14 % water content

Labour requirement per plot.

ANEX 2

PLOTS SITUATION

RAS: 2.2a

emphasis : comparison 3 amounts of fertilzers for rubber

farmer : **WARNI**

field size : 5 500 m²

number of rep : 2

number of plot per rep : 3

Plot size 900 m²

total number of plots per field 6

Slope : MEDIUM

Current status : entirely cropped, rubber is well weeded

Rice : partly cropped in 95/96

Palawijas : cassava, groundnut

RUBBER :

clones : RRIC 100

date of planting January 1996

apparent number of dead trees : 30 %

Available stock of plants in polybag : 15

Contour line : correct

ASSOCIATED TREES :

already planted on the field : few kemiri.

A nursery for 60 plants : 20 petai, 20 kemiri and 20 jengkol should be prepared.

OBSERVATIONS :

A new nursery for rubber stump in polybag should be prepared for 25th of March.

A precise map should be done with positions of all trees for each barisan karet.

The stacking of the plot has to be done to identify the 6 plots (2 rep of 3 plots).

RAS: 2.2a

emphasis : comparison 3 amounts of fertilzers for rubber
farmer : **EMA** (daughter of Warni)
field size : 5 600 m²
number of rep : 2
number of plot per rep : 3
Plot size 900 m²
total number of plots per field 6

Slope : medium to high
Current status : entirely cropped, rubber is well weeded

Rice : partly cropped in 95/96
Palawijas : cassava, groundnut, chili

RUBBER :

clones : RRIC 100
date of planting January 1996
apparent number of dead trees : 30 %
Available stock of plants in polybag : 0

Contour line : not correct.

ASSOCIATED TREES :

already planted on the field : few kemiri.
A nursery for 60 plants : 20 petai, 20 kemiri and 20 jengkol should be prepared

OBSERVATIONS :

A new nursery for rubber stump in polybag should be prepared for 25th of March in association with Warni..
A precise map should be done with positions of all trees for each barisan karet.
The stacking of the plot has to be done to identify the 6 plots (2 rep of 3 plots).

RAS:	2.2b
emphasis	Rice experimentation
farmer :	**SIAM**
field size :	5 500 m²
number of rep :	1
number of plot per rep :	4
Plot size :	1 300 m²
total number of plots per field	4
Slope :	high
Current status :	cropped
Rice :	yes in rainy season 95/96.
Palawijas :	groundnut, sweet potato and cassava

RUBBER :

clones :	PB 260
date of planting	january 1996
apparent number of dead trees :	25 %

Available stock of plants in polybag : 0

Good level of weeding. ***Some cassava in the upper part of the plot should be removed (too much shadow.***

Contour line : correct

ASSOCIATED TREES :

already planted on the field : very few

A nursery for 60 plants : 20 petai, 20 kemiri and 20 jengkol should be prepared

OBSERVATIONS

A new nursery for rubber stump in polybag should be prepared for 25th of March in association with BUDIMAN

A precise map should be done with positions of all trees for each barisan karet.

The stacking of the plot has to be done to identify the 4 plots (1 rep in this farm)

RAS:	**2.2b**
emphasis	Rice experimentation
farmer :	**BURHAM**
field size :	4 500 m²
number of rep :	1
number of plot per rep :	4
Plot size :	1 100 m²
total number of plots per field	4
Slope :	high
Current status :	cropped
Rice :	yes in rainy season 95/96.
Palawijas :	groundnut, cassava, chili, papaya

RUBBER :

clones :	PB 260
date of planting	january 1996
apparent number of dead trees :	30 %

Available stock of plants in polybag : 0

Weeding should be done in certain place : too much shadow close to cassava for instance.

Contour line : correct

ASSOCIATED TREES :

already planted on the field : kemiri, durian

A nursery for 60 plants : 20 petai, 20 kemiri and 20 jengkol should be prepared

OBSERVATIONS

A new nursery for rubber stump in polybag should be prepared for 25th.

A precise map should be done with positions of all trees for each barisan karet.

The stacking of the plot has to be done to identify the 4 plots (1 rep in this farm)

RAS:	2.2c
emphasis	Comparison between clone and BLIG
farmer :	**UDIN**
field size :	8 400 m²
number of rep for clone:	4
number of plot per rep :	1
Plot size :	1 000 m²
number of rep for BLIG:	2
number of plot per rep :	2
Plot size :	1 000 m²
total number of plots per field	8
Slope :	medium to high
Current status :	entirely invaded by alang² and weeds
Rice :	no
Palawijas :	no

RUBBER :

clones :	PB 260
date of planting	january 1996
apparent number of dead trees :	more than 50 %

Available stock of plants in polybag : 0

IMMEDIATE COMPLETE WEEDING IS REQUIRED

Contour line : seems to be correct

ASSOCIATED TREES :

already planted on the field : No

A nursery for 60 plants : 20 petai, 20 kemiri and 20 jengkol should be prepared

OBSERVATIONS

A new nursery for rubber stump in polybag should be prepared for 25th of March.
A precise map should be done with positions of all trees for each barisan karet. The map should indicates where are the plots with rubber alive. **The plots with dead rubber should be used for planting the 4 plots with BLIG.**
The stacking of the plot has to be done to identify the 8 plots :

4 plots of 1000 m² with PB 260
2 plots of 1000 m² with BLIG/North Sumatra to be bought in the village.
2 plots with BLIG/south-Sumatra from Dr Hisar.

RAS:	2.2c
emphasis	Comparison between clone and BLIG
farmer :	**BUDIMAN**
field size :	6 400 m²
number of rep for clone:	3
number of plot per rep :	1
Plot size :	900 m²
number of rep for BLIG:	2
number of plot per rep :	2
Plot size :	900 m²
total number of plots per field	7
Slope :	medium to high
Current status :	cropped
Rice :	yes in rainy 95/96 season
Palawijas :	paddy, groundnut, cassava, chili

RUBBER :

clones :	RRIC 100
date of planting	january 1996
apparent number of dead trees :	more than 50 %

Available stock of plants in polybag : 50
Good weeding

Contour line : correct

ASSOCIATED TREES :
already planted on the field : Kemiri
A nursery for 60 plants : 20 petai, 20 kemiri and 20 jengkol should be prepared

OBSERVATIONS

A new nursery for rubber stump in polybag should be prepared for 25th of March.
A precise map should be done with positions of all trees for each barisan karet.

Immediate weeding should be done in order to plant BLIG :
- use of round-up
- holing
- planting of the 2 BLIG planting material (BLIG from North Sumatra to be brought in the village)
- weeding on the rubber row
-complete weeding one month after using Round-up

The stacking of the plot has to be done to identify the 7 plots :

7 plots of 900 m² with PB 260
2 plots of 900 m² with BLIG/North Sumatra to be bought in the village.
2 plots of 900 m² with BLIG/south-Sumatra from Dr Hisar.

RAS:	2.2b
emphasis	Rice experimentation
farmer :	**BADUL**
field size :	8000 m²
number of rep :	2
number of plot per rep :	4
Plot size :	1 000 m²
total number of plots per field	8
Slope :	high
Current status :	belukar
Rice :	no.
Palawijas :	no

RUBBER :

clones : PB 260
date of planting september 96
apparent number of dead trees :
Available stock of plants in polybag : to be brought by Dr Hisar

A polybag nursery should be prepared for 500 stumps.

Contour line : has to be done after weeding.

ASSOCIATED TREES :

already planted on the field : no
A nursery for 60 plants : 20 petai, 20 kemiri and 20 jengkol should be prepared

OBSERVATIONS

Weeding in May
Stacking in countour line in June
Planting in september

RAS:	2.2b
emphasis	Rice experimentation
farmer :	**MUKTAR**
field size :	8000 m²
number of rep :	2
number of plot per rep :	4
Plot size :	1 000 m²
total number of plots per field	8
Slope :	MEDIUM
Current status :	CROPPED partly, partly with alang²
Rice :	in 95/96 and in March 96
Palawijas :	groundnut, cassava on 50 % of the plot

RUBBER :

clones :	PB 260
date of planting	september 96

apparent number of dead trees :

Available stock of plants in polybag : to be brought by Dr Hisar

A polybag nursery should be prepared for 500 stumps.

Contour line : has to be done after harvesting the palawijas in June, holing in july.

ASSOCIATED TREES :

already planted on the field : no

A nursery for 60 plants : 20 petai, 20 kemiri and 20 jengkol should be prepared

OBSERVATIONS

ANEX 3

PADDY SURVEY

UPLAND RIVE VARIETY SURVEY
PADDI LADANG SURVEI

Desa :
Dusun :
Kecamatan :
Kabupaten :
Propinsi :

MARET 1996

NAMA JENIS PADDI LADANG	WAKTU PANEN BERAPA bulan	ORIGIN DARI MANA	OBSERVATIONS Observasi
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Dari mana : asli, dari Jawa, dari lain, dari proyek (yang proyek....)
Semua informasi tentang produksi.....
Harus tulis yang jenis petani lebih suka.

ANEX 4

RUBBER GROWTH MONITORING

MEMO / RAS METHODOLOGY

RUBBER TREES GROWTH MONITORING IN RAS EXPERIMENTS

The first 6 month are very important in term of growth as rubber trees should develop correctly up to 5/6 whorls (normally 1 per month in good conditions). Then, the canopy and the girth begin to develop.
Therefore, the growth monitoring of rubber trees may be done as following :

- A - during the first year :

3 measurements :

- 1 - Diameter 10 cm above grafting point.

- 2 - number of whorls
control the distribution of trees with 1, then 2, 3, 4 and 5 (or more) whorls every 3 months in order to see the possible delay in growth compared to a standart growth (1 whirl per month in normal conditions).

% of trees per plot with x whirls

NUMBER OF WHORLS

Time of monitoring	1	2	3	4	5 and more
P+3 months	%				
P+6 months	%				
P+9 months	%				
P+12 months	%				

P = Planting time

-3 - The height of rubber trees should also be monitored, in particular in comparison with the average height of the forest regrowth in the interrow for RAS 1. Same frequency as for the number of whorls and diameter.

These 3 measurements may be done on the data file for RAS.

- B - at 12 months and every plantation birthday :
control of the circumference of rubber trees at 1 meter above ground level with a selected number of trees per plot. For tree sampling, refer to annex (from Rubber/CIRAD-CP) with 30 trees per plot to be monitored.

ANEX 5

PLOT FILES

RAS PLOT MONITORING FILE

RAS 2.2a
RUBBER FERTILISATION TRIAL IN RAS SYSTEM

1 file per replikasi

Nama petani :
Desa :
Dusun :
Kecamantan :
Kabupaten :
Propinsi :

Nama kelompok tani :

Rep area/luas plot in m :

Clone/klon : :

PLOT DESIGN
treatment : 3 levels of fertilisation (O, RP, TSDP)

Rubber 550 trees/ha + associated trees : 92 trees/ha

March 1996

RAS 2.2a

3 plots of 1000 m² (with 3 level of fertilization) x 3 replication = 0 plots of 1000 m² der farm

PLOT PREPARATION and PLANTING/praparasi kebun dan tanam

Slashing date/waktu bersikhan lokasi :
burning date/ :

Desription of the rep :

Surrounding vegetation :

Total number of rubber trees/berapa pohon karet
PLOT A
Number of rubber trees:
PLOT B
Number of rubber trees :
PLOT C :
Number of rubber trees :

RUBBER PLANTING MATERIAL

Rubber stump clone/OMAT klon apa :
Origin of the budwood/entrys dari mana :
Origin of the rootstocks/batang bawah dari mana :
Planting density for rubber : 550 trees/ha 550 pohon karet/ha

Rubber planting date/waktu tanam karet :
Type of planting material :
(Direct, tapih, polybag....)

Fertilization/pupuk Rock phosphate
(At planting time) :
Dose per tree/berapa gram per pohon :
Dose per plot/berapa pupuk per plot :

RUBBER growth MONITORING/KARET pertumbuhan MONITORING

PLANTS SURVIVABILITY

	BAGIAN 0 fertilization		BAGIAN RP fertilization only		BAGIAN TCSDP complete fertilization	
YEAR /tahun	planted	dead	planted	dead	planted	dead
Planting /waktu Ditanam						
+3 months						
+ 6 months						
+ 9 months						
+ 12 months						
+ 18 months						
+ 24 months						

do the se table for each replication per farm :
Replication 1
Replication 2 and
replication 3

PLANTS GROWTH : see the specific table

DATA FILE FOR RAS 2.2 a
RUBBER GROWTH MONITORING

DESA :
PETANI :
RAS : **RAS 2.2 a**
DATE : YEAR OF RUBBER PLANTING :

TREE	BAGIAN A diameter	no fertilization height	whorl
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
average			
whorl	DISTRIBUTION		
	1		
	2		
	3		
	4		
	5 AND +		

RAS 2.2a

TREE	BAGIAN B diameter	RP FERTILIZATION height	whorl	TREE
1				1
2				2
3				3
4				4
5				5
6				6
7				7
8				8
9				9
10				10
11				11
12				12
13				13
14				14
15				15
16				16
17				17
18				18
19				19
20				20
21				21
22				22
23				23
24				24
25				25
26				26
27				27
28				28
29				29
30				30
average				average
whorl	DISTRIBUTION 1 2 3 4 5 AND +			whorl

RAS 2.2a

TREE	BAGIAN C diameter	complete TCSDP FERTILIZATION height	 whorl
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
average whorl	DISTRIBUTION 1 2 3 4 5 AND +		

ASSOCIATED PERENNIAL PLANTING MATERIAL/POHON LAIN

SEE TABEL/lihat tabel
92 trees/ha 92 pohon lain /ha

ASSOCIATED PERENNIAL PLANTING MATERIAL/POHON LAIN

TREE POHON	NUMBER of TREES Nonor pohon	ORIGIN DARI MANA	VARIETY NAMA JENIS
DURIAN			
RAMBUTAN			
DUKU			
PETAI			
CEMPEDAK			
JENGKOL			
TANGKIL/ MELINJAU			
OTHER FRUIT TREE POHON BUAH LAIN			
TIMBER TREES POHON KAYU			
SURIAN			
OTHER TREE POHON LAIN			

DATA FILE FOR RAS 2.2
ASSOCIATED TREES GROWTH MONITORING

DESA :
PETANI :
RAS : **RAS 2 and 3**
DATE :

ASSOCIATED TREES

TREE	diameter	height	TREE	diameter	height
1			56		
2			57		
3			58		
4			59		
5			60		
6			61		
7			62		
8			63		
9			64		
10			65		
11			66		
12			67		
13			68		
14			69		
15			70		
16			71		
17			72		
18			73		
19			74		
20			75		
21			76		
22			77		
23			78		
24			79		
25			80		
26			81		
27			82		
28			83		
29			84		
30			85		
31			86		
32			87		
33			88		
34			89		
35			90		
36			91		
37			92		
38			93		
39			94		
40			95		
41			96		
42			97		
43			98		
44			99		
45			100		
46			101		
47			102		
48			103		
49			104		
50			105		
51			106		
52			107		
53			108		
54			109		
55			110		

RAS 2.2a

INTERCROPS/1 file per plot.

Do as many copy as plot of this page.

YEAR 1 PADDY
HARVESTING FIRST YEAR OF CROPPING/PANEN TAHUN PERTAMA

Name of the plot :

Paddy harvesting date/tanggal panen paddi :
Rice variety/jenis paddi :
Rice cycle/waktu panen :
Origin of seeds :
Production of the plot/produksi plot :
Yield per ha/hasil per ha :
Date of harvesting/tanggal panen

Fertilization/pupuk untuk paddy :

rock phosphate in kg :
dose per ha :
dose per plot :
urea in kg :
dose per ha :
dose per plot :

Date of urea first supply :
Date of urea second supply :

other associated crop harvesting /panentanaman makanan lain :
corn/Jaggung :
cassava :
vegetables/sayuran :
other/lain..... :

WEEDING
Presence of Imperata :
Presence of Mikenia :
Presence of other weeds :
Date of first weeding :
Date of second weeding :

OBSERVATIONS :

After rice : second intercrop duting dry season
sessudah paddi : ada tanaman makanan lain
musin kering : di antara bulan maret dan september :

	Nama jenis variety	tanggal tanaman Planting date	tanggal panen harvesting date	produksi hasil Production Yield
Corn/jaggung :				
Chili/cabe :				
Other/lain :				

INTERCROPS/1 file per plot.

Do as many copy as plot of this page.

YEAR 1 Palawijas (if not rice)

HARVESTING FIRST YEAR OF CROPPING/PANEN TAHUN PERTAMA

Name of the plot : PALAWIJAS
Associated crop harvesting
/panentanaman makanan lain :

	pisang	ubi kayu	cabe	sayur	lain
Nama jenis					
waktu tanam					
waktu panen					
Berapa per plot (pisang)					
hasil/bulan					
Total hasil per plot					
Observasi					

:

WEEDING

Presence of Imperata :
Presence of Mikenia :
Presence of other weeds :
Date of first weeding :
Date of second weeding
Date of third weeding:
Othe weeding :
OBSERVATIONS :

After rice : second intercrop duting dry season
sessudah paddi : ada tanaman makanan lain
musin kering : di antara bulan maret dan september :

	Nama jenis variety	tanggal tanaman Planting date	tanggal panen harvesting date	produksi hasil Production Yield
Corn/jaggung :				
Chili/cabe :				
Other/lain :				

RAS PLOT MONITORING FILE

RAS 2.2b
RICE TRIAL IN RAS 2.2 SYSTEM

1 file per replikasi

Nama petani :
Desa :
Dusun :
Kecamantan :
Kabupaten :
Propinsi :

Nama kelompok tani :

Rep area/luas plot in m :

Clone/klon : :

PLOT DESIGN :
2treatments :
treatment 1 : rice variety (3 varieties) : 3 plots of 1000 m²
treatment 2 : level of fertilization : (3 levels : 0; 1/2 and full recommended dose) : 3 plots of 1 000 m²
Total number of plots : 9 plots of 1 000 m² = 9 000 m².

Rubber 550 trees/ha + associated trees 92 trees/ha

March 1996

RAS 2.2b

3 plots of 1000 m² (3 rice varieties) x 3 plots (with 3 level of fertilization)

PLOT PREPARATION and PLANTING/praparasi kebun dan tanam

Slashing date/waktu bersikhan lokasi :
burning date/ :

Desription of the rep :

Surrounding vegetation :

Total number of rubber trees/berapa pohon karet

RUBBER PLANTING MATERIAL

Rubber stump clone/OMAT klon apa :
Origin of the budwood/entrys dari mana :
Origin of the rootstocks/batang bawah dari mana :
Planting density for rubber : 550 trees/ha 550 pohon karet/ha

Rubber planting date/waktu tanam karet :
Type of planting material :
(Direct, tapih, polybag....)

Fertilization/pupuk Rock phosphate
(At planting time) :
Dose per tree/berapa gram per pohon :
Dose per plot/berapa pupuk per plot :

RUBBER growth MONITORING/KARET pertumbuhan MONITORING

PLANTS SURVIVABILITY

	ALL PLOTS	
YEAR /tahun	planted	dead
Planting /waktu Ditanam		
+3 months		
+ 6 months		
+ 9 months		
+ 12 months		
+ 18 months		
+ 24 months		

do the se table for each replication per farm :
Replication 1
Replication 2 and
replication 3

PLANTS GROWTH : see the specific table

DATA FILE FOR RAS 2.2
RUBBER GROWTH MONITORING

DESA :
PETANI :
RAS : **RAS 2.2b**
DATE : YEAR OF RUBBER PLANTING :

RICE : Local
Cultivation : N-P
Saja
(Kecil)

TREE	BAGIAN diameter	height	whorl
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
average			
whorl	DISTRIBUTION 1 2 3 4 5 AND +		

1 file per one variety

DATA FILE FOR RAS 2.2
RUBBER GROWTH MONITORING

DESA :
PETANI :
RAS : **RAS 2.2b**
DATE : YEAR OF RUBBER PLANTING :

RIS : LOCAL
fertilization : BPS
POE
(tengah)

TREE	BAGIAN diameter	height	whorl
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
average whorl	DISTRIBUTION 1 2 3 4 5 AND +		

DATA FILE FOR RAS 2.2
RUBBER GROWTH MONITORING

DESA :
PETANI :
RAS : **RAS 2.2b**
DATE : YEAR OF RUBBER PLANTING :

RICE : WAYA RADEN
Fertilization : BPS
Dais
(tengah

TREE	BAGIAN diameter	height	whorl
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
average			
whorl	DISTRIBUTION 1 2 3 4 5 AND +		

DATA FILE FOR RAS 2.2
RUBBER GROWTH MONITORING

DESA :
PETANI :
RAS : **RAS 2.2b**
DATE : YEAR OF RUBBER PLANTING :

LICE : WAJARAREN
Location : CRIFC (Besar)

TREE	BAGIAN diameter	height	whorl
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
average			
whorl	DISTRIBUTION		
	1		
	2		
	3		
	4		
	5 AND +		

ASSOCIATED PERENNIAL PLANTING MATERIAL/POHON LAIN

SEE TABEL/lihat tabel
92 trees/ha 92 pohon lain /ha

ASSOCIATED PERENNIAL PLANTING MATERIAL/POHON LAIN

TREE POHON	NUMBER of TREES Nonor pohon	ORIGIN DARI MANA	VARIETY NAMA JENIS
DURIAN			
RAMBUTAN			
DUKU			
PETAI			
CEMPEDAK			
JENGKOL			
TANGKIL/ MELINJAU			
OTHER FRUIT TREE POHON BUAH LAIN			
TIMBER TREES POHON KAYU			
SURIAN			
OTHER TREE POHON LAIN			

DATA FILE FOR RAS 2.2
ASSOCIATED TREES GROWTH MONITORING

DESA :
PETANI :
RAS : **RAS 2 and 3**
DATE :

ASSOCIATED TREES

TREE	diameter	height	TREE	diameter	height
1			56		
2			57		
3			58		
4			59		
5			60		
6			61		
7			62		
8			63		
9			64		
10			65		
11			66		
12			67		
13			68		
14			69		
15			70		
16			71		
17			72		
18			73		
19			74		
20			75		
21			76		
22			77		
23			78		
24			79		
25			80		
26			81		
27			82		
28			83		
29			84		
30			85		
31			86		
32			87		
33			88		
34			89		
35			90		
36			91		
37			92		
38			93		
39			94		
40			95		
41			96		
42			97		
43			98		
44			99		
45			100		
46			101		
47			102		
48			103		
49			104		
50			105		
51			106		
52			107		
53			108		
54			109		
55			110		

RAS 2.2B

INTERCROPS/1 file per plot.

Do as many copy as plot of this page.

YEAR 1 PADDY
HARVESTING FIRST YEAR OF CROPPING/PANEN TAHUN PERTAMA

Name of the plot :

Paddy harvesting date/tanggal panen paddi :
Rice variety/jenis paddi :
Rice cycle/waktu panen :
Origin of seeds :
Production of the plot/produksi plot :
Yield per ha/hasil per ha :
Date of harvesting/tanggal panen

Fertilization/pupuk untuk paddy :

rock phosphate in kg :
dose per ha :
dose per plot :
urea in kg :
dose per ha :
dose per plot :

Date of urea first supply :
Date of urea second supply :

other associated crop harvesting /panentanaman makanan lain :
corn/Jaggung :
cassava :
vegetables/sayuran :
other/lain..... :

WEEDING
Presence of Imperata :
Presence of Mikenia :
Presence of other weeds :
Date of first weeding :
Date of second weeding :

OBSERVATIONS :

After rice : second intercrop duting dry season
sessudah paddi : ada tanaman makanan lain
musin kering : di antara bulan maret dan september :

	Nama jenis variety	tanggal tanaman Planting date	tanggal panen harvesting date	produksi hasil Production Yield
Corn/jaggung :				
Chili/cabe :				
Other/lain :				

RAS PLOT MONITORING FILE

RAS 2.2C
CLONAL RUBBER/BLIG COMPARISON
IN RAS 2.2 SYSTEM

1 file per replikasi

Nama petani :
Desa :
Dusun :
Kecamantan :
Kabupaten :
Propinsi :

Nama kelompok tani :

Rep area/luas plot in m :

Clone/klon : :

PLOT DESIGN :
2treatments :
treatment 1 : RUBBER CLONE : 5 plots of 1000 m²
treatment 2 : BLIG : 5 plots of 1 000 m²
Total number of plots : 10 plots of 1 000 m² = 1 ha.

Rubber 550 trees/ha + associated Trees 92 trs/ha.

March 1996

RAS 2.2c

5 plots of 1000 m² (clones) + 5 plots (with BLIG)

PLOT PREPARATION and PLANTING/praparasi kebun dan tanam

Slashing date/waktu bersikhan lokasi :
burning date/ :

Desription of the rep :

Surrounding vegetation :

Total number of rubber trees/berapa pohon karet

RUBBER PLANTING MATERIAL

Rubber stump clone/OMAT klon apa :
Origin of the budwood/entrys dari mana :
Origin of the rootstocks/batang bawah dari mana :
Planting density for rubber : 550 trees/ha 550 pohon karet/ha

Rubber planting date/waktu tanam karet :
Type of planting material :
(Direct, tapih, polybag....)

Fertilization/pupuk Rock phosphate
(At planting time) :
Dose per tree/berapa gram per pohon :
Dose per plot/berapa pupuk per plot :

RUBBER growth MONITORING/KARET pertumbuhan MONITORING

PLANTS SURVIVABILITY

	BAGIAN with clonal rubber		BAGIAN with BLIG	
YEAR /tahun	planted	dead	planted	dead
Planting /waktu Ditanam				
+3 months				
+ 6 months				
+ 9 months				
+ 12 months				
+ 18 months				
+ 24 months				

PLANTS GROWTH : see the specific table

DATA FILE FOR RAS 2.2
RUBBER GROWTH MONITORING

DESA :
PETANI :
RAS : **RAS 2.2c**
DATE : YEAR OF RUBBER PLANTING :

TREE	BAGIAN A	CLONAL RUBBER	
	diameter	height	whorl
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
average			
	DISTRIBUTION		
whorl	1		
	2		
	3		
	4		
	5 AND +		

RAS 2.2c

TREE	BAGIAN B diameter	BLIG /Nalt Sumatra. height	whorl
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
average whorl	DISTRIBUTION 1 2 3 4 5 AND +		

RAS 2.2c

TREE	BAGIAN C / South Sumatra diameter	BLIG height	whorl
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
average whorl	DISTRIBUTION 1 2 3 4 5 AND +		

ASSOCIATED PERENNIAL PLANTING MATERIAL/POHON LAIN

SEE TABEL/lihat tabel
92 trees/ha 92 pohon lain /ha

ASSOCIATED PERENNIAL PLANTING MATERIAL/POHON LAIN

TREE POHON	NUMBER of TREES Nonor pohon	ORIGIN DARI MANA	VARIETY NAMA JENIS
DURIAN			
RAMBUTAN			
DUKU			
PETAI			
CEMPEDAK			
JENGKOL			
TANGKIL/ MELINJAU			
OTHER FRUIT TREE POHON BUAH LAIN			
TIMBER TREES POHON KAYU			
SURIAN			
OTHER TREE POHON LAIN			

DATA FILE FOR RAS 2.2
ASSOCIATED TREES GROWTH MONITORING

DESA :
PETANI :
RAS : **RAS 2 and 3**
DATE :

ASSOCIATED TREES

TREE	diameter	height	TREE	diameter	height
1			56		
2			57		
3			58		
4			59		
5			60		
6			61		
7			62		
8			63		
9			64		
10			65		
11			66		
12			67		
13			68		
14			69		
15			70		
16			71		
17			72		
18			73		
19			74		
20			75		
21			76		
22			77		
23			78		
24			79		
25			80		
26			81		
27			82		
28			83		
29			84		
30			85		
31			86		
32			87		
33			88		
34			89		
35			90		
36			91		
37			92		
38			93		
39			94		
40			95		
41			96		
42			97		
43			98		
44			99		
45			100		
46			101		
47			102		
48			103		
49			104		
50			105		
51			106		
52			107		
53			108		
54			109		
55			110		

RAS 2.2c

INTERCROPS/1 file per plot.

Do as many copy as plot of this page.

YEAR 1 PADDY
HARVESTING FIRST YEAR OF CROPPING/PANEN TAHUN PERTAMA

Name of the plot :

Paddy harvesting date/tanggal panen paddi :
Rice variety/jenis paddi :
Rice cycle/waktu panen :
Origin of seeds :
Production of the plot/produksi plot :
Yield per ha/hasil per ha :
Date of harvesting/tanggal panen

Fertilization/pupuk untuk paddy :

rock phosphate in kg :
dose per ha :
dose per plot :
urea in kg :
dose per ha :
dose per plot :

Date of urea first supply :
Date of urea second supply :

other associated crop harvesting /panentanaman makanan lain :
corn/Jaggung :
cassava :
vegetables/sayuran :
other/lain..... :

WEEDING
Presence of Imperata :
Presence of Mikenia :
Presence of other weeds :
Date of first weeding :
Date of second weeding :

OBSERVATIONS :

After rice : second intercrop duting dry season
sessudah paddi : ada tanaman makanan lain
musin kering : di antara bulan maret dan september :

	Nama jenis variety	tanggal tanaman Planting date	tanggal panen harvesting date	produksi hasil Production Yield
Corn/jaggung :				
Chili/cabe :				
Other/lain :				

ANEX 6

INPUTS REQUIREMENTS

INPUTS AND ACTIVITIES DISTRIBUTION BETWEEN FARMERS AND SRAP

SRAP project	FARMER
Rubber stumps for replacements	replacement
fertilizers for rubber, including NPK for polybag	application and weeding according to protocoles
wayararem seeds (improved upland rice)	local rice seeds
fertilizers for rice	seeds of palawijas
Furadan for rice and rubber	
Pesticides for rubber	
Buku Buruh + bolpen	
tools (cangkol)	
Protection system against wild pigs (4 per farmers)	Control of animals
Round-up for new farmers for plot preparation for planting BLIG	
BLIG planting material (to be bought at the village)	Plot preparation and lanting
polybag for rubber and associated trees	
Plants of Sao for associated trees	collecting 40 seeds of jengkol, 40 seeds of kemiri and 40 seeds of petai for associated trees/

FERTILIZERS REQUIREMENT FOR 1996

	RUBBER				RICE		
	REQUIREMENT FOR 1996						
	0.2	0.2	0.2	0.12	100	140	75
	PLANTING	LATER					
FARMER	SP 36	SP36	UREA	KCL	SP36	UREA	KCL
EMA	41	62	62	37.2	56	78.4	42
WARNI	40	60	60	36	54.5	76.3	40.875
SIAM		60	60	36	54.5	76.3	40.875
BURHAN		50	50	30	45	63	33.75
UDIN		46	46	27.6	42	58.8	31.5
		23	23	13.8	21	29.4	15.75
BUDIMAN		36	36	21.6	32	44.8	24
		18	18	10.8	16	22.4	12
BADUL	88	88	88	52.8	80	112	60
MUKTAR	88	88	88	52.8	80	112	60
TOTAL	**257**	**531**	**531**	**319**	**481**	**673**	**361**

	TOTAL REQUIREMENT		
	SP36	UREA	KCL
Total kg	1,269	1,204	679
Price in rp	500	500	500
TOTAL COST	634,260	602,200	339,675
total fertilizer cost	**1,576,135**		

RUBBER PLANTING MATERIAL
REQUIREMENTS FOR REPLACEMENT

FARMER	CLONE	Number of rubber trees	% of dead estimated	number of trees to be replaced	number of stumps to be provided
EMA	RRIC 100	310	0.3	93	120
WARNI	RRIC 100	300	0.3	90	120
SIAM	PB 260	300	0.25	75	100
BURHAN	PB 260	250	0.3	75	100
UDIN	PB 260	230	0.5	115	150
	BLIG1	115	to be planted		
	BLIG2	115	to be planted		
BUDIMAN	RRIC 100	180	0.5	90	120
	BLIG1	90	to be planted		
	BLIG2	90	to be planted		
BADUL	PB 260	440	to be planted		500
MUKTAR	PB 260	440	to be planted		500
TOTAL	**PB 260**				**1350**
	RRIC 100				**360**
	total				**1710**

Blig1 : from North sumatra : to be bought in the village
BLIG2 : from Dr Hisar (South Sumatra)

For Badul and Muktar, PB 260 may be replaced by RRIC 100.

ANEX 7

SRAP BUDGET IN WEST SUMATRA

TOTAL GAPKINDO+PRO-RLK

1996

OPERATING COST OF THE PROJECT for the PHASE I : YEAR 1996

In roupiah

INPUT	TOTAL COST	GAPKINDO	PRO RLK
COST OF TRIALS ESTABLISHMENT/West Sumatra			
Round-up	150,000		150,000
rice seeds	200,000		200,000
fertilizers for rice RAS 2	1,000,000		1,000,000
fertilizers for rubber	1,000,000	1,000,000	
NPK fertilizers for polybag	50,000	50,000	
Furadan	100,000	100,000	
pesticides/Insecticides for rice	200,000		200,000
perennial planting material	200,000	200,000	
BLIG PLANTS	250,000	250,000	
Tools	100,000		100,000
polybag for associated trees and rubber (replacements	100,000	100,000	
1 sprayer	150,000	150,000	
Other inputs/miscellanous	500,000	150,000	350,000
TOTAL COST	**4,000,000**	**2,000,000**	**2,000,000**

BUDGET WEST SUMATRA SRAP ACTIVITIES

GAPKINDO BUDGET **1995**

OPERATING COST OF THE PROJECT for the PHASE I : YEAR 1995

In roupiah

INPUT	TOTAL COST
COST OF TRIALS ESTABLISHMENT/West Sumatra	
Planting materiel from Sembawa	3,250,000
Inputs (RP + fertilizers + polybag + soil analysis + transportation	1,550,000
TRANSPORTATION COST for mission	
mission 1 augustus 1995	940,000
mission 2 december 1995	992,000
TOTAL COST	**6,732,000**
TOTAL BUDGET	10,500,000
BALANCE FOR 1996	**3,768,000**

GAPKINDO **1996**

OPERATING COST OF THE PROJECT for the PHASE I : YEAR 1996

In roupiah

INPUT	TOTAL COST
COST OF TRIALS ESTABLISHMENT/West Sumatra	
Total input for GAPKINDO	2,000,000
TRANSPORTATION COST for mission	
mission 1 January 1996	885,000
mission 2 March 1996	885,000
mission 3 juin 1996	885,000
mission 4 septembre 1996	885,000
mission 5 decembre 1996	885,000
FARMERS TRAINING COST	800,000
TOTAL COST	**7,225,000**
AVAILABLE ON GAPKINDO BUDGET 1995 Not spent in 1995	3,768,000
TO BE FUNDED for 1996	**3,457,000**

Rubber stumps from Sembawa (total cost 1 000 000 rp) is covered by a special GAPKINDO emergency funds.

ANEX 8

WEEDING AND FERTILIZATION PROGRAMME

MEMO
WEEDING LEVEL IN RAS 1 EXPERIMENTS IN JAMBI

Type of weeding (zone of weeding):
It is clear that we talk about the rubber row weeding (I suggest 1 meter wide, so 50 cm beside the rubber row on each side, and not 1,5 meter as Gede suggested in order to limit labour). Weeding is made through hoeing the row : slahing the weeds is generaly not effective for more than 3 or 4 weeks.. Hoeing the whole row seems to be better than circling the trees only..

PROGRAM MENBERSIHKAN LAPANGAN PERCOBAAN PETANI BANGKOK

6 MENBERSIHKAN PER TAHUN

BELUKAR DI LORONG : membersihkan di barisan karet saja

Waktu tanaman	Mulai	+ 2 bulan	+ 4 bulan	+ 6 bulan	+ 8 bulan	+ 10 bulan
December 95	Mulai March	Mulai may	Mulai July	Mulai September	Mulai November	Mulai January

PROPINSI SUMATERA BARAT

PROGRAM MENBERSIHKAN LAPANGAN PERCOBAAN PETANI

ALL RAS 2.2 BANGKOK

BAGIAN 2 : 6 MENBERSIHKAN
membersihkan di barisan karet saja
Di lorung ada tupangsari

Waktu tanaman	Mulai	+ 2 bulan	+ 4 bulan	+ 6 bulan	+ 8 bulan	+ 10 bulan
December 95	Mulai March	Mulai may	Mulai July	Mulai September	Mulai November	Mulai January

PROGRAM PEMUPUKAN LAPANGAN PETANI RAS

PUPUK PER POHON KARET
IN GRAMMES/tree

	WAKTU T-ANAMAN December 95	+ 3 bulan MARCH	+ 6 bulan JUNE	+ 9 bulan SEPTEMBER	+ 12 bulan DECEMBER
RP	200				
UREA		50	50	50	50
SP36		35	35	35	35
KCL			40	40	40

PEMUPUKAN KARET
PEMUPUKAN PER KHALI (setiap 3 bulan)

	UREA	SP 36	KCL
per plot of 1000 m²	2.75	1.9	2.2
Per 8 plots (8 000 m²)	22	15	18

PROPINSI SUMATERA BARAT

ANEX 9

BUKU BURUH

PROYEK GAPKINDO /ICRAF
POLA WANATANI KARET

BUKU BURU

Desa :
Petani :
Macan percobaan :

Propinsi :
Tahun :

BULAN :

tanggal	aktivitasi	nomor orang K	B	waktu (berapa jam)	nomor bagian	observasi
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

K = buru dari keluarga B = buru dari keluar